



# CROSSLAND BOILER SALES AND SERVICE, INC.

BOILER SPECIALISTS

## TOWERS

The towers themselves appear to be in relatively good condition. Crossland Boiler Sales and Service, Inc., is making the following recommendations for the refurbishment of the towers.

### Findings and Recommendations:

#### Tower No. 610:

This tower appears to be in satisfactory condition with the exception of the 1 1/2" nozzles. C.B.S. recommends that all 1 1/2" nozzles and the (1) 2" nozzle be replaced. Internally the tower will be steam cleaned. Externally, we propose to strip the insulation from the support rings, manholes, nozzles and ladder supports, as necessary. In addition, we propose to strip the insulation from any protrusion from the tower through the insulation. The reason for this recommendation is that condensations has probably collected underneath the insulation in these areas. Once this has been performed, additional recommendations based on conditions found will be submitted. The price for this tower as well as the others does not include the replacement of connecting piping as these recommendations are found in the piping section. Thickness readings and a visual inspection were performed on this tower and confirm the above recommendations.

#### Tower No. 530:

After reviewing of the report (visual inspection and thickness readings) this tower seems to be in satisfactory condition. We propose the same scope of work as on Tower No. 610 with the exception of replacing the nozzles as they have little corrosion (progressive only) and do not appear to need replacement.

#### Tower No. 410 and 110:

C.B.S. recommends the same scope of work for these two towers as No. 530.

In general the towers seem to be the least affected of all the equipment and appear to be in good condition. C.B.S. commends the plant personnel on their performance in preparing these towers for an lengthy plant shutdown and their work and diligence seems to have paid off.

The price for the refurbishment of these towers will be \$51,350.00.



# CROSSLAND BOILER SALES AND SERVICE, INC.

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HEAT EXCHANGERS

The following heat exchangers were open, inlets and outlets flushed (shell side), closed, hydrotested, plugged, rerolled or seal welded as required and hydrotested again. Conditions found and our recommendations are listed below.

## Exchanger No. 421:

The shell on this exchanger is in good condition. The tubes on this exchanger were clogged with rust. We hydrotested this exchanger and it passed the hydro. Due to the condition of the tubes, we intend to retube this exchanger.

## Exchanger No. I-2411:

Visual inspection confirmed shell was in good condition. After hydrotesting, between 20 and 30 tubes leaked.

## Exchanger No. 721:

This exchanger is in good condition and passed the hydrotest.

## Cooling Tower:

The fans and motors are in acceptable condition. The ladders, some of the internals and parts of the floor and handrails need to be replaced.

In the event of access  $\frac{1}{2}$ , 20% or more tubes plug, bundle will be addressed at that time.

## Heat Exchanger Summary:

We inspected the exchangers requested by C.O.R.C.O. and are proposing the following.

Crossland Boiler Sales and Service, Inc., proposes to furnish all the necessary labor, tools, supervision and insurances to perform the following scope of work.

## Scope of Work:

Repair tube sheets and replace tubes as necessary.

Price for this project will be \$210,000.00.



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### PUMPS MECHANICAL OVERHAUL

A complete inspection of the pumps was not requested, however we did a visual inspection of two pumps and our recommendation is open, inspect and reassemble, as required.

The price for this project will be \$55,000.00.

### PUMPS ELECTRIC OVERHAUL

Crossland Boiler Sales & Service, Inc., proposes the following:

Starters will be removed as necessary. The starters will then be disassembled and cleaned. The contacts on these motors will be rebuilt. All buses will be cleaned and the high voltage breakers will be recalibrated. If cleaning the starters does not produce the required results they will be replaced with new. In addition we will meg every conductor serving every motor. This scope is the only way we can guarantee that C.O.R.C.O. will have uninterrupted service once the plant has been started up.

The price for this project will be \$172,000.00.



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### COMPRESSORS MECHANICAL

A visual inspection only was performed on the 4 compressors for the storage facility at the Texaco Gas Station. There was no problems with the flyweights and the rotors appear to be in good condition. The grease in these units has hardened.

To make a complete evaluation of these compressors, we recommend a complete and thorough inspection. This will involve taking the housings apart.

The price for a complete inspection on these units will be \$30,000.00.

### COMPRESSORS ELECTRICAL OVERHAUL

The compressors electrical system that supplies the storage facility by the Texaco Gas Station is virtually destroyed. This entire area has been under at least 4' of water at some point in time. This water has been inside the equipment, the transformers, MCC units, conduits and motors.

The feeders and equipment have been vandalized, conduit cut through, wire pulled out and generally destroyed.

Crossland Boiler Sales & Service, Inc., is recommending the following:

Replace all service equipment, the main switchboard, the motor control centers, high voltage main and the transformer. All the feeders must be rerun to the equipment. All wires must be repulled and all control items be replaced.

All compressor motors must either be rewound or replaced. We are not including the price of replacing the motors, only rewinding the reworking them. If the existing motors are beyond repair, then the purchasing of new ones will have to be addressed. We also do not have the replacing of the 4160 feeder cable in our price.

The price for this project will be \$275,000.00.



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### VESSELS

In general the vessels appear to be in good condition. Two of the vessels were hydrotested but failed due to piping flanges. We recommend blasting the sludge and scale from the vessels and painting them only.

The price for this project will be \$65,150.00.

### PLANT INSTRUMENTATION OVERHAUL

Following a thorough inspection of the instrumentation at your facility we have listed our recommendations below:

1. Transmitters: Remove and replace diaphragm gaskets if necessary. Recalibrate and reinstall.
2. Control Valves: Remove as necessary control valves, inspect seats, replace diaphragms, calibrate and install.
3. Gauges: Gauges, pressure differential indicators, temperature indicators, temperature elements, remove and function check, repair or replace as necessary and reinstall.
4. Control Room Instruments: Calibrate and function check all instruments (controllers, indicators, totalizers, and recorders).
5. Gas Detectors: Function check and repair as necessary.
6. Alarms: Check all alarms inputs.
7. Tubing: Pressure check all tubing and replace as necessary.
8. Root and Secondary Valves: Replace all packing and gaskets as necessary.
9. Control System: Simulate and tune all control loops, alarms, emergency shutdown systems and motor controls.

The price for this project including all labor, tools, supervision and insurance will be \$295,687.00.



## CROSSLAND BOILER SALES AND SERVICE, INC.

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### TANKS

The tanks appear in good condition structurally and we recommend sandblasting and painting them only. The following price includes all preparation and scaffolding required to perform the project.

The price for this project will be \$50,000.00.

### PIPING

After careful inspection of the existing piping we estimate and are quoting replacement of randomly tested as necessary. The larger piping appears to be in good condition and should be left as is.

The price for the piping replacement will be \$190,000.00.